

Local diffusion networks act as pathways to sustainable water quality management

Mark Lubell, Assoc. Professor, UC Davis
Dept of Environmental Science and Policy

Allan Fulton
Farm Advisor, UC Cooperative Extension

Introduction

- Principles of sustainability
- Challenge of non-point source water pollution
- Basic social theories to achieve change and cooperation
- Irrigated Lands Program in Central Valley of California
- Survey of Sacramento Valley Producers

Principles of sustainability

- Promote environmental health
- Maintain economic viability of farming
- Consider the diversity of agricultural communities

Challenge of non-point source water pollution

- Cumulative result of all producers in a watershed
- Attitude towards change and cooperation

Hypothesis:

“Diffusion Networks” offer three important pathways to sustainable water quality management

- Information on innovative farming practices
- Provide a repository of social capital
- Cultural change

Irrigated Lands Regulatory Program, Central Valley of California



- Began 2003
- Oversight Central Valley Regional Water Quality Control Board
- Currently 28,000 Central Valley farmers complying
- Over 5 million irrigated acres
- Comply as members of water quality coalitions

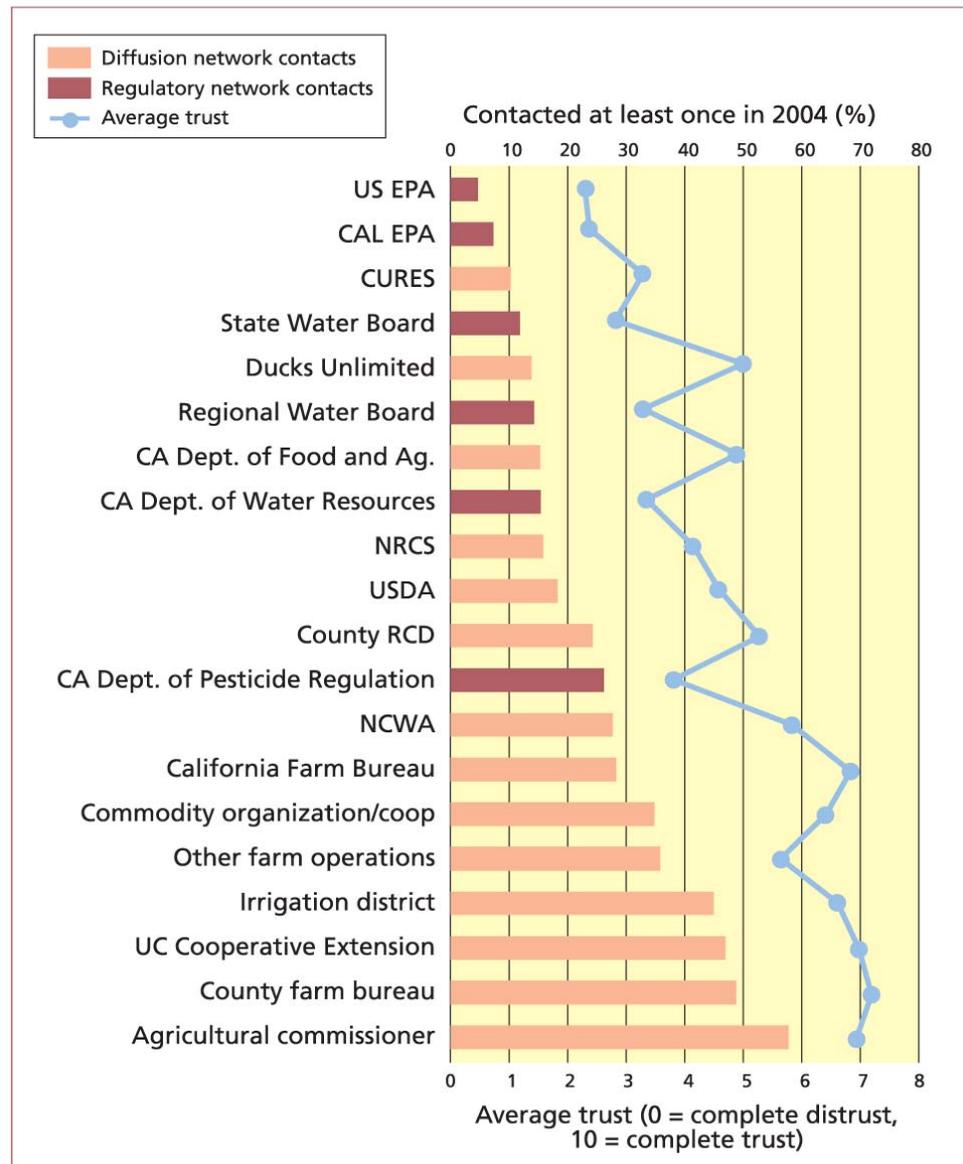
Sacramento Valley Water Quality Coalition



Survey of Sacramento Valley Producers

- Mail survey to 5073 farmers
- Two years after Irrigated Lands Program began
- Two groups of respondents
- 300 telephone and 20 personal interviews
- 68 questions, mostly yes/no and 7 point Likert scale
- Additional questions to orchard group
- 1229 total respondents
- 32 % response rate from orchard producer
- 24 % response from other group

Trust and Contact with Water Quality Management Organizations



Factors affecting grower participation in Sacramento Valley Water Quality Coalition

Independent Variable	Statistical Significance	Correlation	Slope Coefficient
Diffusion Network Contacts	$p < 0.05$	Positive	0.27
Operator Income Level	$p < 0.05$	Positive	0.11
Operator Education Level	$p < 0.05$	Positive	0.07
Perceived Severity of Water Quality Problems	$p < 0.07$	Negative	-0.07
Regulatory Network Contacts	Not Significant	Negative	-0.06
Coalition Group Outreach Activities	Not Significant	Positive	0.02
Perceived Likelihood of Ag Causing Problem	Not Significant	Positive	0.01

Factors affecting grower satisfaction with Sacramento Valley Water Quality Coalition

Independent Variable	Statistical Significance	Correlation	Slope Coefficient
Coalition Group Outreach Activities	p < 0.05	Positive	0.25
Perceived Likelihood of Ag Causing Problem	p < 0.05	Positive	0.07
Local Diffusion Network Contacts	p < 0.05	Positive	0.05
Operator Education Level	p < 0.05	Negative	-0.06
Operator Income Level	Not Significant	Positive	0.03
Regulatory Network Contacts	Not Significant	Negative	-0.02
Perceived Severity of Water Quality Problems	Not Significant	Positive	0.01

Factors influencing adoption of water quality management practices in orchard crops

Independent Variable	Statistical Significance	Correlation	Slope Coefficient
Awareness of Management Practices	$p < 0.05$	Positive	0.70
Awareness of a Pesticide Problem	$p < 0.05$	Positive	0.65
Farm Income Level	$p < 0.05$	Positive	0.14
Local Diffusion Network Contacts	$p < 0.05$	Positive	0.11
Operator Income Level	Not Significant	Positive	0.03
Regulatory Network Contacts	Not Significant	Positive	0.0

Summary

- Irrigated agricultural water policy founded on “diffusion networks” more likely to sustain
- Contact with local diffusion networks was the one variable that significantly and positively influenced grower participation, satisfaction and adoption of management practices
- Concern that government decisions can strengthen or weaken “diffusion networks”, especially public agency support.

Research Funding Sources

- The Russell Sage Foundation Initiative on Trust
- California Policy Research Center

Publications

- Lubell, M. and A. Fulton, Local diffusion networks act as pathways to sustainable agriculture in the Sacramento River Valley. *California Agriculture*. 2007. Volume 61. No. 3. pp. 131-137.
- Lubell, M. and A. Fulton, Local policy networks and Agricultural Watershed Management. *Journal of Public Administration Research and Theory*. Oxford University Press.